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IS 6727 (1972): Fireclay checker bricks for open hearth furnace [MTD 15: Refractories]



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Indian Standard
SPECIFICATION FOR
FIRECLAY CHECKER-BRICKS FOR
OPEN-HEARTH FURNACE
(First Reprint MAY 1984)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR FIRECLAY CHECKER-BRICKS FOR OPEN-HEARTH FURNACE

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(Continued on page 2)

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(Continued on page 6)

Indian Standard
**SPECIFICATION FOR
FIRECLAY CHECKER-BRICKS FOR
OPEN-HEARTH FURNACE**

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 October 1972, after the draft finalized by the Refractories Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard keeps in view the manufacturing and trade practices followed in the country in this field.

0.3 This standard contains clause 4.2 which calls for agreement between the purchaser and the manufacturer.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers requirements for fireclay checker-bricks for open-hearth furnace.

2. TYPES

2.1 Fireclay checker-bricks shall be of three types, namely, Type 1, Type 2 and Type 3.

3. SUPPLY OF MATERIAL

3.1 General requirements relating to the supply of fireclay checker-bricks shall be as laid down in IS: 1387-1967†.

*Rules for rounding off numerical values (*revised*).

†General requirements for the supply of metallurgical materials (*first revision*).

3.2 The checker-bricks shall be compact, of homogeneous texture and free from cracks, internal fissures, cavities, voids and other flaws. They shall be burnt evenly throughout, and shall have sufficient mechanical strength and no soft corners.

4. TOLERANCE ON SIZE

4.1 Rectangular Checker-Bricks — Variations from specified length and thickness shall be allowed to the extent of $\begin{matrix} +0 \\ -1.5 \end{matrix}$ percent or $\begin{matrix} +0 \\ -3 \end{matrix}$ mm whichever is greater.

4.2 Special Shapes — Size tolerance for interlocking and/or specified checkers shall be as agreed to between the purchaser and the manufacturer.

5. CHEMICAL COMPOSITION

5.1 The alumina content of fireclay checker-bricks, when determined in accordance with IS : 1335-1959*, shall be as follows:

	<i>Percent, Min</i>
Type 1	30
Type 2	36
Type 3	39

6. PHYSICAL REQUIREMENTS

6.1 The three types of fireclay checker-bricks shall conform to the requirements given in Table 1.

7. MARKING

7.1 The checker-bricks shall be clearly marked with the manufacturer's name or trade-mark, and type.

7.1.1 The checker-bricks may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

*Methods for the direct determination of alumina in refractory materials (*tentative*).

TABLE 1 PHYSICAL REQUIREMENTS FOR FIRECLAY CHECKER-BRICKS

Sl. No.	CHARACTERISTIC	(Clause 6.1) REQUIREMENT			METHOD OF TEST (REF TO CLAUSE No. OF IS : 1528- 1962*)
		Type 1	Type 2	Type 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Pyrometric cone equivalent, Standard Pyrometric Cone (ASTM) Number, <i>Min</i>	30	31½	33	3
ii)	Refractoriness under load (<i>ta</i>), °C, <i>Min</i>	1 300	1 400	1 450	4
iii)	Apparent porosity, percent, <i>Max</i>	25	22	19	9
iv)	Cold crushing strength, kgf/cm², <i>Min</i>	200	250	300	6
v)	Permanent linear change after reheating for 2 hours at 1 400°C, per- cent, <i>Max</i>	± 1.5	± 1.0	± 1.0	8

*Methods of sampling and physical tests for refractory materials.

8. SAMPLING

8.1 Representative samples shall be drawn according to the scheme of sampling given in IS : 1528-1962* for carrying out tests specified in this standard.

*Methods of sampling and physical tests for refractory materials.

(Continued from page 2)

Refractories Investigations Subcommittee, SMDC 18 : 3

Condener

SHRI J. C. BANERJEE

107 C. I. T. Road, Belehata, Calcutta 10

Members

SHRI I. B. BANERJEE

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SHRI R. N. BHASKAR (*Alternate*)

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DR B. RAO

SHRI B. N. GHOSH (*Alternate*)

SHRI D. R. SUBRAMANIAN

SHRI K. N. MARWAHA (*Alternate*)

SHRI P. S. SUNDARAM

Representing

Hindustan Steel Ltd (Alloy Steels Plant), Durgapur

The Ishwar Industries Ltd, New Delhi

Hindustan Steel Ltd (Bhilai Steel Plant), Bhilai

Orissa Industries Ltd, Rourkela

Belpahar Refractories Ltd, Belpahar

Indian Refractory Makers Association, Calcutta

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Hindustan Steel Ltd (Durgapur Steel Plant),
Durgapur

India Refractories, Calcutta

National Metallurgical Laboratory (CSIR),
JamshedpurHarry Refractory & Ceramic Works Private Ltd,
CalcuttaCentral Glass & Ceramic Research Institute
(CSIR), Calcutta

Orissa Cement Ltd, Rajgangpur

The Tata Iron & Steel Co Ltd, Jamshedpur

Burn & Co Ltd, Calcutta

Hindustan Steel Ltd (Rourkela Steel Plant),
Rourkela

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 26 60 21, 27 01 31

Telegrams : Manaksanetha

Regional Offices:

		Telephone
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